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(54) **SERVICE AND COMMERCE BASED COOKIES AND NOTIFICATION**

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G06F 3/01 (2006.01)

(52) **U.S. Cl.**
CPC ***G06F 3/011*** (2013.01)

(58) **Field of Classification Search**
USPC 719/318
See application file for complete search history.

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(57) **ABSTRACT**

A computer implemented method, a computer program product, and a data processing system alert a real world representative of an action within a virtual world. An indication of an avatar within a virtual world interacting with a virtual object is received. Responsive to the avatar interacting with a virtual object, a historical profile for the avatar is identified. A notification trigger is then forwarded to an electronic device external of the virtual world that the avatar has interacted with the virtual object, wherein the notification includes the historical profile.

20 Claims, 4 Drawing Sheets

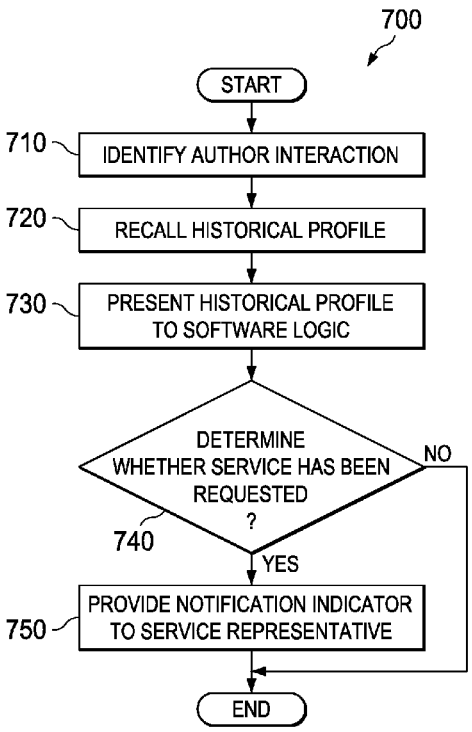


FIG. 1

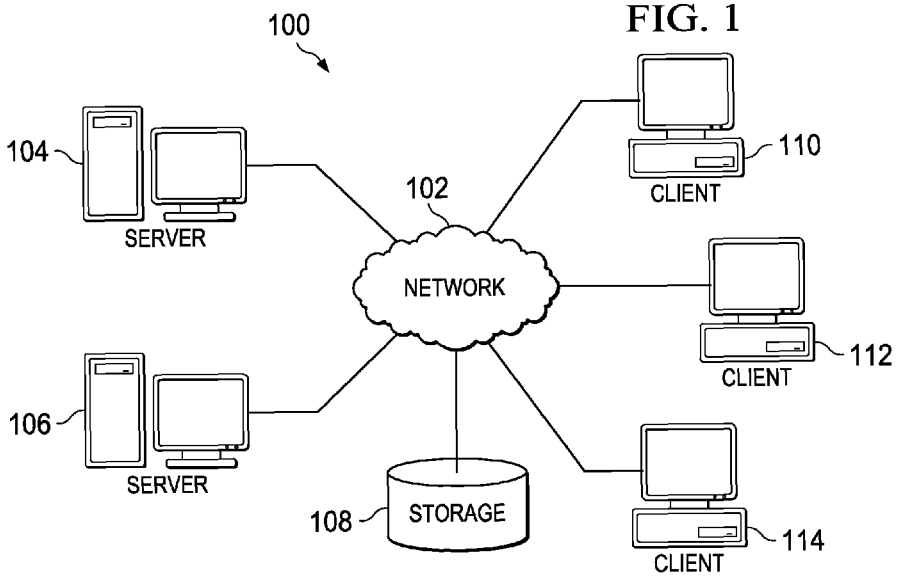

100
104
SERVER
102
NETWORK
110
CLIENT
112
CLIENT
106
SERVER
108
STORAGE
114
CLIENT

FIG. 2

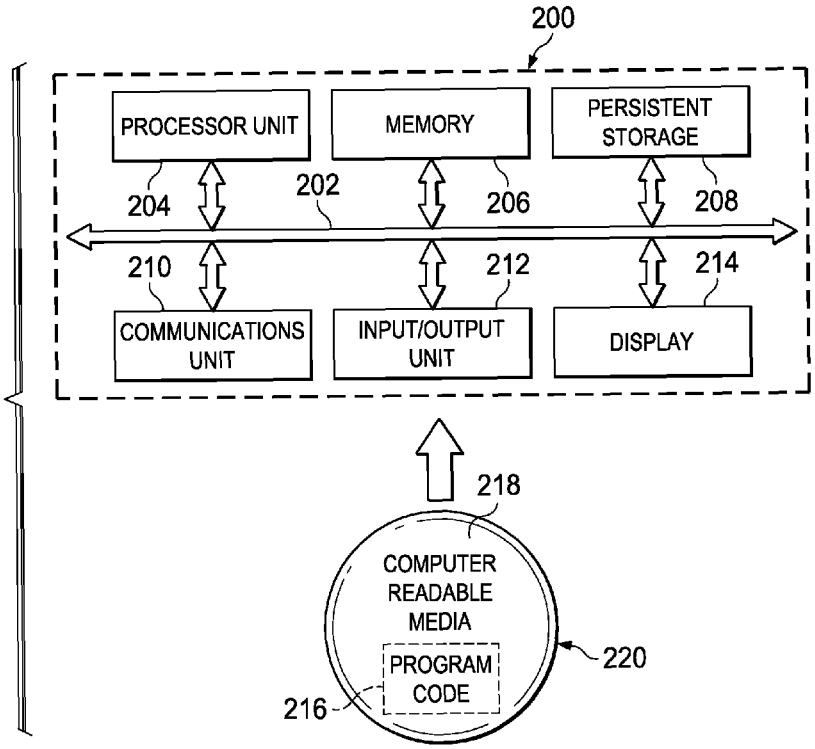

200
PROCESSOR UNIT
MEMORY
PERSISTENT STORAGE
204
202
206
208
210
212
214
COMMUNICATIONS UNIT
INPUT/OUTPUT UNIT
DISPLAY
218
COMPUTER READABLE MEDIA
PROGRAM CODE
216
220

FIG. 3

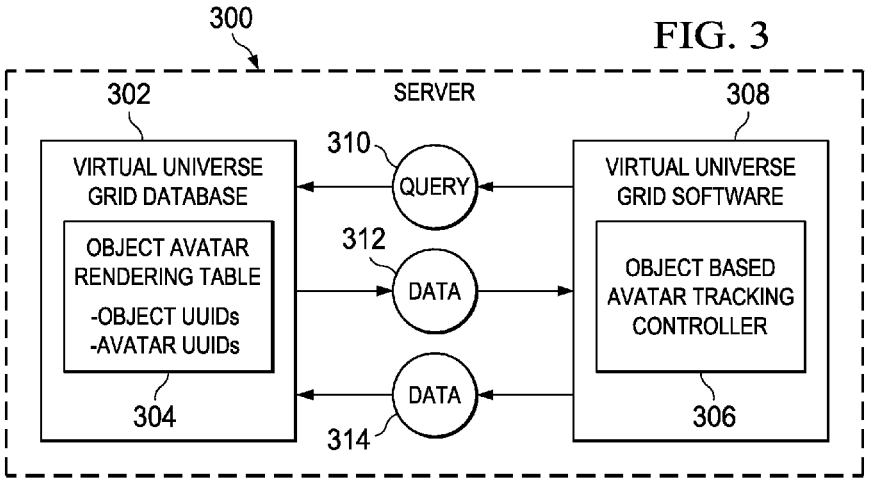


FIG. 4

400

OBJECT AVATAR RENDERING TABLE
402 RenderingUUID = PRIMARY KEY.
404 ObjectUUID = FOREIGN KEY TO EXISTING OBJECT TABLE.
406 AvatarUUID = FOREIGN KEY TO EXISTING AVATAR TABLE.
408 Zone1EnterTime = UTC DATETIME WHEN AVATAR'S SESSION STARTED (WHEN THEY ENTERED THE FIRST ZONE, ASSUMING A TWO ZONE MODEL).
410 Zone1LeaveTime = UTC DATETIME WHEN AVATAR LEFT THE FIRST ZONE.
412 Zone2EnterTime = UTC DATETIME WHEN AVATAR'S SESSION STARTED (WHEN THEY ENTERED THE SECOND ZONE, ASSUMING A TWO THRESHOLD MODEL).
414 Zone2LeaveTime = UTC DATETIME WHEN AVATAR LEFT THE SECOND ZONE.
416 NumberOfZone1Enters = NUMERIC COUNTER OF HOW MANY TIMES AVATAR HAS ENTERED THE FIRST ZONE.
418 NumberOfZone2Enters = NUMERIC COUNTER OF HOW MANY TIMES AVATAR HAS ENTERED THE SECOND ZONE.
420 LastCoordinates = COORDINATE DATA OF WHERE THE AVATAR IS WITHIN THE ZONES (TYPICALLY AN XYZ SYSTEM).

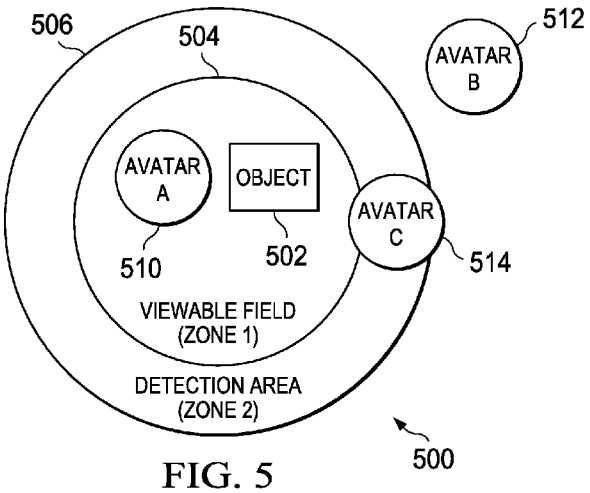

506
504
512
AVATAR B
AVATAR A
OBJECT
AVATAR C
514
510
502
VIEWABLE FIELD (ZONE 1)
DETECTION AREA (ZONE 2)
500

FIG. 5

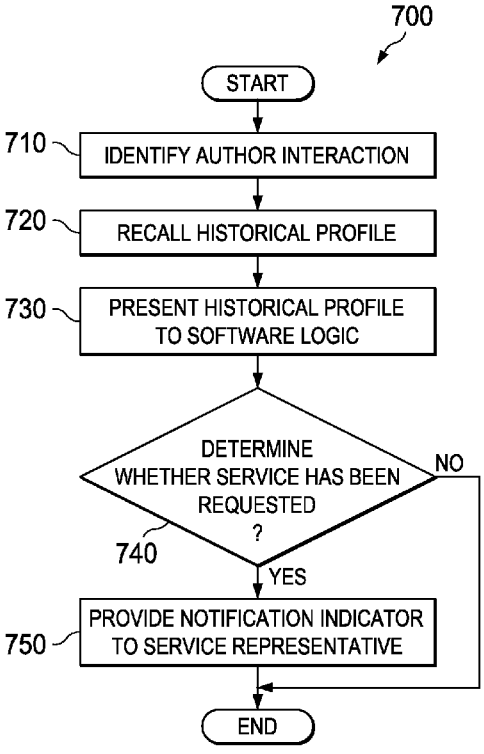
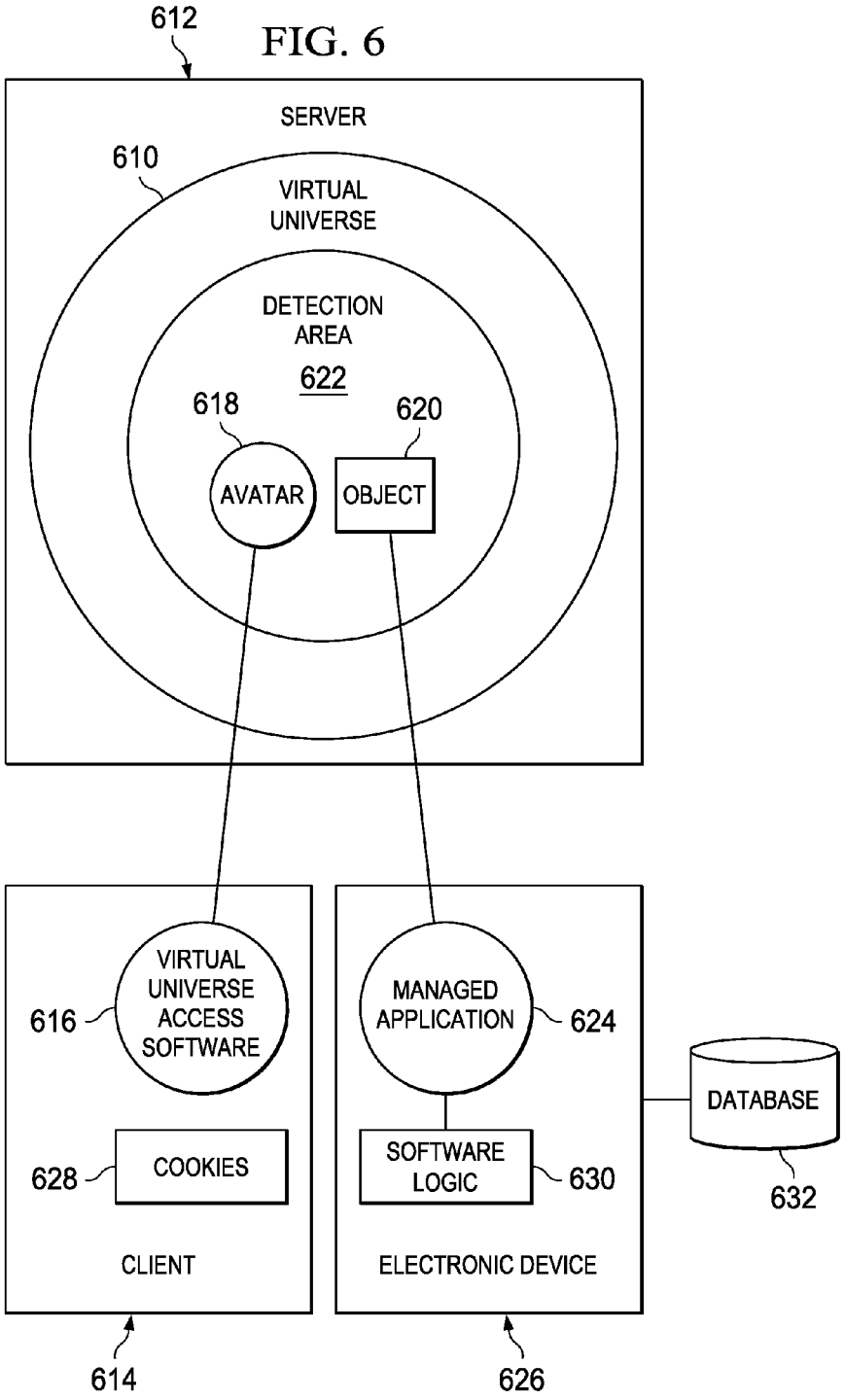

700
START
710
IDENTIFY AUTHOR INTERACTION
720
RECALL HISTORICAL PROFILE
730
PRESENT HISTORICAL PROFILE TO SOFTWARE LOGIC
DETERMINE WHETHER SERVICE HAS BEEN REQUESTED ?
740
NO
YES
750
PROVIDE NOTIFICATION INDICATOR TO SERVICE REPRESENTATIVE
END

FIG. 7

FIG. 6


612
SERVER
610
VIRTUAL UNIVERSE
DETECTION AREA
622
618
620
AVATAR
OBJECT
VIRTUAL UNIVERSE ACCESS SOFTWARE
616
COOKIES
628
CLIENT
614
MANAGED APPLICATION
624
SOFTWARE LOGIC
630
ELECTRONIC DEVICE
626
DATABASE
632

SERVICE AND COMMERCE BASED COOKIES AND NOTIFICATION

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates generally to a computer implemented method, a data processing system, and a computer program product. More specifically, the present invention relates to a computer implemented method, a data processing system, and a computer program product for providing service within a virtual environment from a real world representative.

2. Description of the Related Art

A virtual universe (VU), also referred to as a metaverse or "3D Internet", is a computer-based simulated environment. Examples of virtual universes include Second Life®, Entropia Universe, The Sims Online®, There, and Red Light Center. Other examples of virtual universes include multiplayer online games, such as EverQuest®, Ultima Online®, Lineage®, and World of Warcraft® (WoW).

Many virtual universes are represented using three dimensional (3-D) graphics and landscapes. The properties and elements of the virtual universe often resemble the properties of the real world, such as in terms of physics, houses, and landscapes. Virtual universes may be populated by thousands of users simultaneously. In a virtual universe, users are sometimes referred to as "residents."

The users in a virtual universe can interact, inhabit, and traverse the virtual universe through the use of avatars. An avatar is a graphical representation of a user that other users in the virtual universe can see and interact with. The avatar's appearance is typically selected by the user and often takes the form of a cartoon-like representation of a human. However, avatars may also have non-human appearances, such as animals, elves, trolls, orcs, fairies, and other fantasy creatures.

A viewable field is the field of view for a particular user. The viewable field for a particular user may include objects, as well as avatars belonging to other users. An object is an element in a virtual universe that does not represent a user. An object may be, for example, buildings, statues, billboards, signs, and advertisements in the virtual universe. The viewable field of a particular user is determined by the virtual universe grid software according to the geometries and textures that are currently loaded in a user's virtual universe client. The virtual universe grid determines the length of time that a user views an object based on processing the data sent to each virtual universe client.

Objects are prevalent in virtual universes. Sometimes one or more objects in a particular user's viewable field may be obstructed from view by other objects in the virtual environment such that the user is unable to see the one or more obstructed objects. For example, a sign may be hidden from view behind a statue or other larger sign. In addition, objects may prove difficult for some users to view based on their relative position and other characteristics, such as lighting and color.

BRIEF SUMMARY OF THE INVENTION

A computer implemented method, a computer program product, and a data processing system alert a real world representative of an action within a virtual world. An indication of an avatar within a virtual world interacting with a virtual object is received. Responsive to the avatar interacting with a virtual object, a historical profile for the avatar is identified. A notification trigger is then forwarded to an electronic device external of the virtual world that the avatar has interacted with the virtual object, wherein the notification includes the historical profile.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

The novel features believed characteristic of the invention are set forth in the appended claims. The invention itself, however, as well as a preferred mode of use, further objectives and advantages thereof, will best be understood by reference to the following detailed description of an illustrative embodiment when read in conjunction with the accompanying drawings, wherein:

FIG. **1** is a pictorial representation of a network of data processing systems in which illustrative embodiments may be implemented;

FIG. **2** is a diagram of a data processing system in accordance with an illustrative embodiment;

FIG. **3** is a block diagram illustrating a virtual universe grid server in accordance with an illustrative embodiment;

FIG. **4** is a block diagram of an object avatar rendering table in accordance with an illustrative embodiment;

FIG. **5** is a block diagram of a detection area for an object in accordance with an illustrative embodiment;

FIG. **6** is a block diagram illustrating client connections to a virtual universe according to an illustrative embodiment; and

FIG. **7** is a flowchart illustrating a process for providing service within a virtual world based on avatar interaction with an in-world object according to an illustrative embodiment.

DETAILED DESCRIPTION OF THE INVENTION

With reference now to the figures and in particular with reference to FIGS. **1-2**, exemplary diagrams of data processing environments are provided in which illustrative embodiments may be implemented. It should be appreciated that FIGS. **1-2** are only exemplary and are not intended to assert or imply any limitation with regard to the environments in which different embodiments may be implemented. Many modifications to the depicted environments may be made.

FIG. **1** depicts a pictorial representation of a network of data processing systems in which illustrative embodiments may be implemented. Network data processing system **100** is a network of computers in which the illustrative embodiments may be implemented. Network data processing system **100** contains network **102**, which is the medium used to provide communications links between various devices and computers connected together within network data processing system **100**. Network **102** may include connections, such as wire, wireless communication links, or fiber optic cables.

In the depicted example, server **104** and server **106** connect to network **102** along with storage unit **108**. Servers **104** and **106** are servers associated with a virtual universe. Users of the virtual universe have agents on servers **104** and **106**. An agent is a user's account. A user uses an agent to build an avatar representing the user. The agent is tied to the inventory of assets or possessions the user owns in the virtual universe. In addition, a region in a virtual universe typically resides on a single server, such as, without limitation, server **104**. A region is a virtual area of land within the virtual universe.

Clients **110**, **112**, and **114** connect to network **102**. Clients **110**, **112**, and **114** may be, for example, personal computers or network computers. In the depicted example, server **104** provides data, such as boot files, operating system images,

and applications to clients **110**, **112**, and **114**. Clients **110**, **112**, and **114** are clients to server **104** in this example.

In a virtual universe, assets, avatars, the environment, and anything visual consists of unique identifiers (UUIDs) tied to geometric data, textures, and effects data. Geometric data is distributed to a user's client computer as textual coordinates. Textures are distributed to a user's client computer as graphics files, such as Joint Photographic Experts Group (JPEG) files. Effects data is typically rendered by the user's client according to the user's preferences and the user's client device capabilities.

In the depicted example, network data processing system **100** is the Internet with network **102** representing a worldwide collection of networks and gateways that use the Transmission Control Protocol/Internet Protocol (TCP/IP) suite of protocols to communicate with one another. At the heart of the Internet is a backbone of high-speed data communication lines between major nodes or host computers, consisting of thousands of commercial, governmental, educational and other computer systems that route data and messages. Of course, network data processing system **100** also may be implemented as a number of different types of networks, such as for example, an intranet, a local area network (LAN), or a wide area network (WAN). FIG. **1** is intended as an example, and not as an architectural limitation for the different illustrative embodiments. Network data processing system **100** may include additional servers, clients, and other devices not shown.

Turning now to FIG. **2**, a diagram of a data processing system is depicted in accordance with an illustrative embodiment of the present invention. In this illustrative example, data processing system **200** includes communications fabric **202**, which provides communications between processor unit **204**, memory **206**, persistent storage **208**, communications unit **210**, input/output (I/O) unit **212**, and display **214**.

Processor unit **204** serves to execute instructions for software that may be loaded into memory **206**. Processor unit **204** may be a set of one or more processors or may be a multiprocessor core, depending on the particular implementation. Further, processor unit **204** may be implemented using one or more heterogeneous processor systems in which a main processor is present with secondary processors on a single chip. As another illustrative example, processor unit **204** may be a symmetric multi-processor system containing multiple processors of the same type.

Memory **206**, in these examples, may be, for example, a random access memory or any other suitable volatile or nonvolatile storage device. Persistent storage **208** may take various forms depending on the particular implementation. For example, persistent storage **208** may contain one or more components or devices. For example, persistent storage **208** may be a hard drive, a flash memory, a rewritable optical disk, a rewritable magnetic tape, or some combination of the above. The media used by persistent storage **208** also may be removable. For example, a removable hard drive may be used for persistent storage **208**.

Communications unit **210**, in these examples, provides for communications with other data processing systems or devices. In these examples, communications unit **210** is a network interface card. Communications unit **210** may provide communications through the use of either or both physical and wireless communications links.

Input/output unit **212** allows for input and output of data with other devices that may be connected to data processing system **200**. For example, input/output unit **212** may provide a connection for user input through a keyboard and mouse. Further, input/output unit **212** may send output to a printer. Display **214** provides a mechanism to display information to a user.

Instructions for the operating system and applications or programs are located on persistent storage **208**. These instructions may be loaded into memory **206** for execution by processor unit **204**. The processes of the different embodiments may be performed by processor unit **204** using computer implemented instructions, which may be located in a memory, such as memory **206**. These instructions are referred to as program code, computer usable program code, or computer readable program code that may be read and executed by a processor in processor unit **204**. The program code in the different embodiments may be embodied on different physical or tangible computer readable media, such as memory **206** or persistent storage **208**.

Program code **216** is located in a functional form on computer readable media **218** that is selectively removable and may be loaded onto or transferred to data processing system **200** for execution by processor unit **204**. Program code **216** and computer readable media **218** form computer program product **220** in these examples. In one example, computer readable media **218** may be in a tangible form, such as, for example, an optical or magnetic disc that is inserted or placed into a drive or other device that is part of persistent storage **208** for transfer onto a storage device, such as a hard drive that is part of persistent storage **208**. In a tangible form, computer readable media **218** also may take the form of a persistent storage, such as a hard drive, a thumb drive, or a flash memory that is connected to data processing system **200**. The tangible form of computer readable media **218** is also referred to as computer recordable storage media. In some instances, computer readable media **218** may not be removable.

Alternatively, program code **216** may be transferred to data processing system **200** from computer readable media **218** through a communications link to communications unit **210** and/or through a connection to input/output unit **212**. The communications link and/or the connection may be physical or wireless in the illustrative examples. The computer readable media also may take the form of non-tangible media, such as communications links or wireless transmissions containing the program code.

The different components illustrated for data processing system **200** are not meant to provide architectural limitations to the manner in which different embodiments may be implemented. The different illustrative embodiments may be implemented in a data processing system including components in addition to or in place of those illustrated for data processing system **200**. Other components shown in FIG. **2** can be varied from the illustrative examples shown.

As one example, a storage device in data processing system **200** is any hardware apparatus that may store data. Memory **206**, persistent storage **208**, and computer readable media **218** are examples of storage devices in a tangible form.

In another example, a bus system may be used to implement communications fabric **202** and may be comprised of one or more buses, such as a system bus or an input/output bus. Of course, the bus system may be implemented using any suitable type of architecture that provides for a transfer of data between different components or devices attached to the bus system. Additionally, a communications unit may include one or more devices used to transmit and receive data, such as a modem or a network adapter. Further, a memory may be, for example, memory **206** or a cache such as found in an interface and memory controller hub that may be present in communications fabric **202**.

A virtual universe is a computer-simulated environment, such as, without limitation, Second Life®, Entropia Universe, The Sims Online®, There, Red Light Center, EverQuest®, Ultima Online®, Lineage®, and World of Warcraft®. A virtual universe is typically represented using three dimensional (3-D) graphics and landscapes.

The users in the virtual universe interact, inhabit, and traverse the virtual universe through avatars. Avatars represent users and are controlled or associated with users. A user can view objects and other avatars within a given proximity of the user's avatar. The virtual universe grid software determines which objects and other avatars are within the given proximity of the user's avatar according to the geometries and textures that are currently loaded in the user's virtual universe client.

Thus the illustrative embodiments provide a computer implemented method, a data processing system, and a computer program product for providing service within a virtual environment from a real world representative. By maintaining a record of information collected in an object avatar rendering table, a historical profile of an avatar can be created. The historical profile can include data in an object avatar rendering table. The historical profile can also include cookies obtained from a data processing system controlling the avatar. When an avatar having a historical profile interacts with on object, an out-of-world customer service representative can be informed on the avatar's in-world activity.

A managed application, such as an applet or a MIDlet, is installed on a customer service representative's electronic device. The managed application is connected via a network with the in-world object. The managed application monitors the in-world object for interaction from an avatar. Responsive to an avatar interacting with the in-world object, the managed application notifies the customer service representative.

Additionally responsive to an avatar interacting with the in-world object, the historical profile for the avatar can be forwarded to a software logic in order to resolve whether the customer service representative should be notified.

FIG. **3** is a block diagram illustrating a virtual universe grid server in accordance with an illustrative embodiment. Server **300** is a server associated with a virtual universe. Server **300** may be a single, stand-alone server, or server **300** may be a server in a virtual universe grid computing system or in a cluster of two or more servers. In this example, server **300** is a server in a grid computing system for rendering and managing a virtual universe.

Virtual universe grid database **302** is a database on the grid computing system for storing data used by virtual universe grid software **308** to render and manage the virtual universe. Virtual universe grid database **302** includes object avatar rendering (OAR) table **304**. Object avatar rendering table **304** stores object unique identifiers and avatar unique identifiers.

In a virtual universe, assets, avatars, the environment, and anything visual, consists of unique identifiers (UUIDs) tied to geometric data, textures, and effects data. Geometric data is data associated with the form or shape of avatars and objects in the virtual universe. Geometric data may be used to construct a wire frame type model of an avatar or object. Geometric data is distributed to a user's client computer as textual coordinates. Textures are distributed to a user's client computer as graphics files, such as JPEG files. Texture data refers to the surface detail and surface textures or color that is applied to wire-frame type geometric data to render the object or avatar. Effects data is typically rendered by the user's client according to the user's preferences and the user's client device capabilities.

Object avatar rendering table **304** stores a unique identifier (UUID) for each selected object in the virtual universe. A selected object is an object in a plurality of objects in the virtual universe that is tracked, monitored, managed, or associated with object avatar rendering table **304**. Object avatar rendering table **304** also stores unique identifiers and other data describing avatars within a viewable field of a selected object or within a selected zone or range associated with the selected object. For example, if the selected objects include object A and object B, then object avatar rendering table **304** stores object A unique identifier, unique identifiers, and other data for all avatars within the viewable field of object A, object B unique identifier, unique identifiers, and other data describing all avatars within the viewable field of object B.

Object based avatar tracking controller **306** stores data **314** in object avatar rendering table **304**. Data **314** includes the unique identifiers and other data describing avatars within the viewable field of one or more selected objects. When object based avatar tracking controller **306** needs data from object avatar rendering table **304** for implementing geometric and texture modifications in the virtual universe, object based avatar tracking controller **306** sends query **310** to object avatar rendering table **304**. In response to query **310**, virtual universe grid database **302** sends data **312** to virtual universe grid software **308** for utilization by object based avatar tracking controller **306** to track avatars and implement modifications of the selected objects to improve the position and appearance of the selected objects within the virtual universe and enable improved visibility of the selected objects.

Virtual universe grid software **308** is software for rendering the virtual universe. Virtual universe grid software **308** includes object based avatar tracking controller **306**. Object based avatar tracking controller **306** is software for tracking avatars within the viewable field of each selected object.

FIG. **4** is a block diagram of an object avatar rendering table in accordance with an illustrative embodiment. Object avatar rendering table **400** is an example of data in an object avatar rendering table, such as object avatar rendering table **304** in FIG. **3**.

RenderingUUID **402** is a primary key for object avatar rendering table **400**. ObjectUUID **404** is a unique identifier for a selected object in a virtual universe. ObjectUUID **404** is a foreign key to the existing object table. AvatarUUID **406** is a foreign key to an existing avatar table. AvatarUUID **406** includes a unique identifier for each avatar in the viewable field of the object associated with objectUUID **404**.

Zone**1**EnterTime **408** is a field of a date and/or time when an avatar enters a first zone within the viewable field of an object. In this example, the zone **1** enter time is a time when an avatar entered the first zone, assuming a model with two or more zones. Zone**1**LeaveTime **410** is a field for a date and/or time when the avatar leaves the first zone. Zone**2**EnterTime **412** is a field in object avatar rendering table **400** for storing a date and/or time when an avatar enters a second zone. The second zone may be an area that is outside the viewable field. In other words, the second zone is an area in which an avatar cannot see the selected object, but the area is in close proximity to the viewable field in which the avatar will be able to see the object. Thus, when an avatar enters the second zone, the object avatar tracking controller software may begin preparing to display the object to the avatar when the avatar does eventually enter the viewable field.

Zone**2**LeaveTime **414** is a field for storing the date and/or time when a given avatar leaves the second zone. NumberofZone**1**Enters **416** is a field for storing the number of times a particular avatar has entered the first zone. This information may be useful to determine whether the user has

never viewed the object and therefore content associated with an object should be displayed in full to the user associated with the avatar. The information in NumberofZone1Enters **416** is also used to determine whether the user has viewed the object one or more times in the past, and therefore, the content associated with the object should be displayed in part, skip introductory material, be modified or abbreviated, or otherwise altered so that the exact same content is not displayed to the user every time the user is within the viewable field of the object.

NumberofZone2Enters **418** is a field for storing the number of times an avatar has entered the second zone. LastCoordinates **420** is a field for storing the coordinate data describing where a given avatar is within the first zone or the second zone of a selected object. The coordinate data is typically given in xyz type coordinate data.

FIG. **5** is a block diagram of a detection area for an object in accordance with an illustrative embodiment. Range **500** is a viewable field **504** and detection area **506** associated with object **502** in a virtual universe. An object, such as object **502**, is an element in a virtual universe that is not directly controlled by a user or associated with a user's account. An object may be, for example, buildings, statues, billboards, signs, and advertisements in the virtual universe. In one illustrative example, object **502** is a building, such as a store, information center, or storefront. In another illustrative example, object **502** is an interactive object, such as a doorbell, a help desk, or other object which can be limitedly manipulated in order to request help from an individual.

Viewable field **504** has a focal point or center at a location that is the same as the location of object **502**. Viewable field **504** may also be referred to as zone **1** or a first zone. An avatar in viewable field **504** is able to see or view object **502** and/or content associated with object **502**. For example, object **502** may be associated with video and/or audio content. Object **502** may also optionally have some movement associated with the object. For example, object **502** may be capable of some limited movement or animation. However, in this example, object **502** is substantially limited to a single location in the virtual universe.

Object **502** is rendered on a user's screen when an avatar associated with the user is within viewable field **504**. Object **502** is rendered using any perspective mode, including but not limited to, a first person perspective, a third person perspective, a bird's eye view perspective, or a map view perspective. A map view perspective renders objects with labels rather than with extensive details and/or texturing.

Detection area **506** is an area adjacent to viewable field **504** within range **500**. Detection area **506** may also be referred to as a second zone or zone **2**. An avatar in detection area **506** cannot see object **502** or view content associated with object **502**. However, when an avatar enters detection area **506**, the object avatar tracking controller software can begin preparing to display object **502** and content associated with object **502** to the avatar when the avatar enters viewable field **504**.

In this example, avatar A **510** is within viewable field **504**. Therefore, avatar A **510** is able to view or see object **502**. Avatar C **514** is within detection area **506**. Avatar C **514** is not able to see or view object **502**. However, the presence of avatar C **514** indicates that avatar C **514** may be about to enter viewable field **504** or that avatar C **514** has just left viewable field **504**. Avatar B **512** is outside range **500**. Avatar B **512** is not able to see or view object **502**. In addition, avatar B **512** is not close enough to viewable field **504** to indicate that avatar B **512** may be preparing to enter viewable field **504**. Therefore, an object avatar tracking table for object **502** includes entries for avatar A **510** in zone **1** and avatar C **514** in zone **2**. However, in this example, the record associated with object **502** in the object avatar rendering table does not include an avatar unique identifier or data for avatar B **512** because avatar B **512** is outside both viewable field **504** and detection area **506**.

Objects are prevalent in virtual universes. By maintaining a record of information collected in an object avatar rendering table, such as object avatar rendering table **400** of FIG. **4**, a historical profile of an avatar can be created. The historical profile can include data in an object avatar rendering table, such as object avatar rendering table **304** in FIG. **3**. The historical profile can also include cookies obtained from a data processing system controlling the avatar. When an avatar having a historical profile interacts with an object, an out-of-world customer service representative can be informed on the avatar's in-world activity.

A managed application, such as an applet or a MIDlet, is installed on a customer service representative's electronic device. The managed application is connected via a network with the in-world object. The managed application monitors the in-world object for interaction from an avatar. Responsive to an avatar interacting with the in-world object, the managed application notifies the customer service representative.

Additionally responsive to an avatar interacting with the in-world object, the historical profile for the avatar can be forwarded to a software logic in order to resolve whether the customer service representative should be notified.

Referring now to FIG. **6**, a block diagram illustrating client connections to a virtual universe is shown according to an illustrative embodiment. Virtual universe **610** executes on server **612**, which can be server **300** of FIG. **3**.

Client **614**, which can be client **110**, **112**, or **114** of FIG. **1**, executes virtual universe access software **616**. Virtual universe access software **616** provides a user at client **614** with access to virtual universe **610**. Virtual universe access software **616** allows a user of client **614** to control avatar **618** within virtual universe **610** in order to interact, inhabit, and traverse virtual universe **610**.

Virtual universe **610** contains object **620**, which can be object **502** of FIG. **5**. Surrounding object **620** is detection area **622**, which can be detection area **506** of FIG. **5**. Avatar **618** can interact with object **620** by entering detection area **622**.

In an additional illustrative embodiment, avatar **618** can interact with object **620** by manipulating object **620**. Avatar **618** can manipulate object **620** by selecting, clicking, highlighting, dragging, or otherwise indicating object **620**.

Upon avatar **618** interacting with object **620**, virtual universe **610** triggers managed application **624**. Managed application **624** is a managed application, such as an applet or a Mobile Information Device Profile application (MIDlet), which is installed on electronic device **626**. Electronic device **626** can be client **110**, **112**, or **114** of FIG. **1**. Managed application **624** forward a notification trigger to the user of electronic device **626** that an avatar is interacting with object **620**. The notification can be an audio alert, a visual alert, a vibratory or motion based alert, or some other alert to inform the user of electronic device **626** that avatar **618** is interacting with object **620**.

In one illustrative embodiment, a user of electronic device **626** can be, for example, but is not limited to, a customer service representative, a technical support person, or some other liaison to the user of client **614**.

In an illustrative embodiment where avatar **618** interacts with object **620**, object **620** forwards a historical profile for the avatar to electronic device **626**. The historical profile can include object avatar rendering table **304** in FIG. **3**. The historical profile can include cookies **628** located on client

614. Cookies 628 are information for future use that is stored by either server 612 or another data processing system on client 614. Historical profile can also include information stored in a separate database such as database 632.

The historical profile for avatar 618 is then received by software logic 630. Software logic 630 is a software component executing on electronic device 626, or another server or client, which determines whether a user of electronic device 626 should be notified. Different functionalities can be used for software logic 630, and the novel features herein can encompass any of such functionalities. Responsive to software logic 630 determining, based on the historical profile for avatar 618, that the user of electronic device 626 should be notified, software logic 630 can trigger managed application 624.

The historical profile can be stored on another database, such as database 632. The historical profile can include a history of the avatar's previous interactions with that object, a set of cookies stored on the data processing system used to control the avatar, and other session data.

Referring now to FIG. 7, a flowchart illustrating a process for providing service within a virtual world based on avatar interaction with an in-world object is shown according to an illustrative embodiment. Process 700 is a software process executing on a data processing system, such as server 300 of FIG. 3.

Process 700 begins by identifying an avatar interaction with an object (step 710). As shown above, an avatar can interact with an object by directly manipulating that object, or by entering a detection zone for that object.

Responsive to identifying the avatar interaction with the object, process 700 recalls a historical profile for the avatar (Step 720). The historical profile can include a history of the avatar's previous interactions with that object, a set of cookies stored on the data processing system used to control the avatar, and other session data that may be stored on another database, such as database 632 of FIG. 6.

Responsive to recalling the historical profile for the avatar, process 700 presents the historical profile to a software logic (step 730). The software logic can then utilize the historical profile to determine whether service has been requested (step 740). If the software determines that service has not been requested ("no" at step 740), the process terminates.

Responsive to a service being requested ("yes" at step 740), a notification is provided to an appropriate service representative (step 750), with the process terminating thereafter. A notice can be provided to the appropriate service representative by triggering a managed application, such as managed application 624 of FIG. 6. The appropriate service representative can then log into the virtual universe in order to fulfill the service request.

Thus the illustrative embodiments provide a computer implemented method, a data processing system, and a computer program product for providing service within a virtual environment from a real world representative. By maintaining a record of information collected in an object avatar rendering table, such as object avatar rendering table 400 of FIG. 4, a historical profile of an avatar can be created. The historical profile can include data in an object avatar rendering table, such as object avatar rendering table 304 in FIG. 3. The historical profile can also include cookies obtained from a data processing system controlling the avatar. When an avatar having a historical profile interacts with on object, an out-of-world customer service representative can be informed on the avatar's in-world activity.

A managed application, such as an applet or a MIDlet, is installed on a customer service representative's electronic device. The managed application is connected via a network with the in-world object. The managed application monitors the in-world object for interaction from an avatar. Responsive to an avatar interacting with the in-world object, the managed application notifies the customer service representative.

Additionally responsive to an avatar interacting with the in-world object, the historical profile for the avatar can be forwarded to a software logic in order to resolve whether the customer service representative should be notified.

The invention can take the form of an entirely hardware embodiment, an entirely software embodiment or an embodiment containing both hardware and software elements. In a preferred embodiment, the invention is implemented in software, which includes but is not limited to firmware, resident software, microcode, etc.

Furthermore, the invention can take the form of a computer program product accessible from a computer-usable or computer-readable medium providing program code for use by or in connection with a computer or any instruction execution system. For the purposes of this description, a computer-usable or computer readable medium can be any tangible apparatus that can contain, store, communicate, propagate, or transport the program for use by or in connection with the instruction execution system, apparatus, or device.

The medium can be an electronic, magnetic, optical, electromagnetic, infrared, or semiconductor system (or apparatus or device) or a propagation medium. Examples of a computer-readable medium include a semiconductor or solid state memory, magnetic tape, a removable computer diskette, a random access memory (RAM), a read-only memory (ROM), a rigid magnetic disk, and an optical disk. Current examples of optical disks include compact disk-read only memory (CD-ROM), compact disk-read/write (CD-R/W), and DVD.

A data processing system suitable for storing and/or executing program code will include at least one processor coupled directly or indirectly to memory elements through a system bus. The memory elements can include local memory employed during actual execution of the program code, bulk storage, and cache memories which provide temporary storage of at least some program code in order to reduce the number of times code must be retrieved from bulk storage during execution.

Input/output or I/O devices (including but not limited to keyboards, displays, pointing devices, etc.) can be coupled to the system either directly or through intervening I/O controllers.

Network adapters may also be coupled to the system to enable the data processing system to become coupled to other data processing systems or remote printers or storage devices through intervening private or public networks. Modems, such as cable modems and Ethernet cards, are just a few of the currently available types of network adapters.

The description of the present invention has been presented for purposes of illustration and description, and is not intended to be exhaustive or limited to the invention in the form disclosed. Many modifications and variations will be apparent to those of ordinary skill in the art. The embodiment was chosen and described in order to best explain the principles of the invention, the practical application, and to enable others of ordinary skill in the art to understand the invention for various embodiments with various modifications as are suited to the particular use contemplated.

What is claimed is:

1. A computer implemented method for alerting a real world representative of an action within a virtual world, the computer implemented method comprising:

monitoring a virtual world for an indication of an interacting with a virtual object;

responsive to receiving the indication of an avatar interacting with a virtual object, identifying a historical profile for the avatar;

forwarding a notification trigger to an electronic device external to the virtual world that the avatar has interacted with the virtual object, wherein a notification includes the historical profile.

2. The computer implemented method of claim **1**, further comprising:

providing a managed application, the managed application forwarding the notification that the avatar has interacted with the virtual object.

3. The computer implemented method of claim **2**, wherein the managed application is an applet or a Mobile Information Device Profile application.

4. The computer implemented method of claim **1**, wherein the notification trigger triggers a notification to the electronic device, the notification being selected from the group consisting of an audio alert, a visual alert, a vibratory and a motion based alert.

5. The computer implemented method of claim **1**, wherein the indication of the avatar within the virtual world interacting with the virtual object is an indication that the avatar has entered a detection zone for the object or that the avatar has manipulated the object.

6. The computer implemented method of claim **1**, wherein the historical profile for the avatar includes information identified within an object avatar rendering table.

7. The computer implemented method of claim **1**, wherein the historical profile for the avatar includes information from cookies located on a data processing system controlling the avatar.

8. A computer program product comprising:

a computer readable medium, wherein the medium does not include a propagating signal, having computer usable program code for alerting a real world representative of an action within a virtual world, the computer program product comprising:

computer usable program code for monitoring a virtual world for an indication of an avatar interacting with a virtual object;

computer usable program code, responsive to the avatar interacting with a virtual object, for identifying a historical profile for the avatar;

computer usable program code for forwarding a notification trigger to an electronic device external of the virtual world that the avatar has interacted with the virtual object, wherein a notification includes the historical profile.

9. The computer program product of claim **8**, further comprising:

computer usable program code for providing a managed application, the managed application forwarding the notification that the avatar has interacted with the virtual object.

10. The computer program product of claim **9**, wherein the managed application is an applet or a Mobile Information Device Profile application.

11. The computer program product of claim **8**, wherein the notification trigger triggers a notification to the electronic device, the notification being selected from the group consisting of an audio alert, a visual alert, a vibratory and a motion based alert.

12. The computer program product of claim **8**, wherein the indication of the avatar within the virtual world interacting with the virtual object is an indication that the avatar has entered a detection zone for the object or that the avatar has manipulated the object.

13. The computer program product of claim **8**, wherein the historical profile for the avatar includes information identified within an object avatar rendering table.

14. The computer program product of claim **8**, wherein the historical profile for the avatar includes information from cookies located on a data processing system controlling the avatar.

15. A data processing system comprising:

a bus;

a communications unit connected to the bus;

a storage device connected to the bus, wherein the storage device includes computer usable program code for alerting a real world representative of an action within a virtual world; and

a processor unit connected to the bus, wherein the processor unit executes the computer usable program code to: monitor a virtual world for an indication of an avatar interacting with a virtual object, responsive to the avatar interacting with a virtual object, to identify a historical profile for the avatar, and to forward a notification trigger to an electronic device external of the virtual world that the avatar has interacted with the virtual object, wherein a notification includes the historical profile.

16. The data processing system of claim **15**, wherein the processor unit further executes the computer usable program code:

to provide a managed application, the managed application forwarding the notification that the avatar has interacted with the virtual object.

17. The data processing system of claim **16**, wherein the managed application is an applet or a Mobile Information Device Profile application.

18. The data processing system of claim **15**, wherein the notification trigger triggers a notification to the electronic device, the notification being selected from the group consisting of an audio alert, a visual alert, a vibratory and a motion based alert.

19. The data processing system of claim **15**, wherein the computer usable program code to receive an indication of an avatar within a virtual world interacting with a virtual object is computer usable program code to receive an indication that the avatar has entered a detection zone for the object or computer usable program code to receive an indication that the avatar has manipulated the object.

20. The data processing system of claim **15**, wherein the historical profile for the avatar includes information identified within an object avatar rendering table.

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